lifter, and properly arranged on the centre of the slide. A drop of balsam is next taken up on the glass rod and allowed to fall upon the object and spread a little way beyond it. A half-inch circular cover glass, previously cleaned, is taken up with a pair of smooth-pointed forceps, and its lower edge allowed to rest against the spring. It is then slowly and very steadily lowered, guided by a mounted needle held in the left hand. In this way a wave of balsam will be driven before it, and will reach the edges of the cover without including any air. Very often the object is displaced by this wave, but this can generally be remedied by a slight pressure with a needle on the side of the cover to which the object has moved. When it is again by this means worked to the centre of the slide, a little firmer pressure should be applied to the centre, so as to press it down and squeeze out all excess of balsam.

(*To be continued.*)

ON THE OLD CALENDARS OF THE ICELANDERS[1]

THE old Icelandic system of measuring time, which to some extent still holds its ground in the island, has the peculiarity of being based on the week as its fundamental unit of measurement, although it recognises a year consisting of fifty-two weeks, the 364 days of which were included in twelve months of thirty days each. To the last of these months, which belonged to the summer, four days were added under the name of *Sumar-auke* or "summer addition." In accordance with this arrangement every given day of a month always fell on one and the same day of the week, as in the lunar year's calendar the first day of each month coincides with the period of new moon.

The Icelandic year was further divided into two half years, viz. summer and winter, known as "*misseri*," the former of which began on a Thursday in April, thence called "summer day," and the latter on a Saturday in October, the "winter day." These "*misseri*" were more used than the year itself to measure time, and Icelanders gave the name "*Misseristal*," or half-year's reckoning, to their calendar, while they habitually counted by the weeks of these winter or summer measures in referring to the everyday occurrences of the passing year, just as they spoke of *winters* and not years, the former being assumed to include the summers which directly followed them in the ordinary course of nature. By an analogous mode of reasoning they spoke of "nights" instead of days in referring to the twenty-four hours of night and day. This custom no longer exists among the modern Scandinavian nations, but traces of it still survive among ourselves in the expressions "fortnight" and "se'nnight," which are undoubted survivals of an ancient northern mode of reckoning time, unknown to southern peoples. This proof of the prevalence of a system of counting by nights among the common ancestors of the Icelanders and Anglo-Saxons makes it the more remarkable that the modern Scandinavians alone among European races should have a separate word to express the twenty-four hours of a day and night, as *dygn* in Swedish, and *dögn* in Dano-Norwegian, which have been derived from the O.N. *dagr*, day.

Each of the Icelandic "*misseri*" was divided into two parts, known as "*màl*," measures. Of these the second half of winter began on a Friday in January, distinguished as "midwinter day," while "midsummer day" fell on a Sunday in July, which was the first day of the second half of the *Sumar-māl*. This last of the four quarters contained ninety-four days, owing to the addition of the four nights of the "Sumar-auke," while the other three contained only ninety days each.

The errors of this method of computation, which gave only 364 days to the year, were early detected, for, as we learn from an interesting manuscript of the twelfth century, known as the "Rimbegla," which is preserved in the Royal Library of Copenhagen, the first reform of the Icelandic calendar was effected by the learned Thorstein Surtr, who, as the grandson of Thorolf Mostrarskegg, one of the original colonists, could scarcely have belonged to a later period than the middle of the tenth century. In accordance with the naïve mode of narration common to the chroniclers of the time, the "Rimbegla" calls in dreams and visions to explain the introduction of a more correct method of counting time among the Icelanders. Thus we are told that when, after long pondering on the reason why the summer was falling back into spring, Thorstein Surtr bethought himself of a way by which the *misseri* might be brought again to their ancient courses, he dreamt that he was standing on the Law-Hill of the Althing, and that while all other men slept, he was awake, but when he seemed to himself to be sleeping, all others were watching. This dream was interpreted by the wise Osyv Helgason to imply that while Thorstein spoke at the Law-Hill, all men must keep silence, and that when he ceased speaking all must proclaim aloud their approval of his words. Accordingly, when he proposed at the Thing that in every seventh summer seven nights should be added to the four nights of the "Sumar-auke," all men agreed to the change without question or hesitation. By the adoption of Thorstein's suggestion, the Icelandic year acquired 365 days, similar to that of the ancient Egyptians, although by retaining the early mode of intercalation in the summer term, the old relations between the days of the month and week remained unchanged. From this time forth the expression "Sumar-auke" was applied equally to the original four annual intercalary days, and to the seventh year's week added by Thorstein, which has retained the term to the present age. In the modern calendar the word "aukanætr," added nights, has, however, replaced the older appellation of "Sumar-auka."

Soon after the introduction of Christianity into Iceland in 1000, the national calendar was brought into closer relations with the Julian system, on which the clergy everywhere based their determinations of the festivals of the Church, and by adding a week to the old "Sumar-auke" five, instead of four, times in twenty-eight years, the average year acquired an addition of one-fourth of a day, and was thus made to approximate more nearly to the Julian year.

In the "Rimbegla" full directions are to be found for comparing the periods of the beginning and ending of the ancient *misseri*, or seasons, with the divisions of the year observed in other Christian lands, while this authority is, moreover, the only source from which we obtain a clear insight into the methods originally adopted for determining for any given year the amount of the irregularities, known as "Rimspiller," which necessarily occurred in a system that took no account of the Julian leap-year. It is curious to observe that while in Iceland, as elsewhere in the middle ages, the fixed and movable festivals of the Church were made to regulate the divisions of time, and to fix the periods of political and social events, the old Icelandic modes of computing time were never eradicated. But although the people continued to count by "*misseri*," winters, weeks, and nights, the beginnings and endings of the "*misseri*" were fixed in Christian times by the dates of the great Church festivals, which similarly controlled all national events, and thus we find that the exact date of the annual "Riding to the Thing," and the duration of the session of the Althing, were regulated by the day of the week on which the Festival of St. Peter and St. Paul (June 29) happened to fall.

The twelve months are spoken of in the older Edda under their respective names, but from the earliest

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[1] "Om Islændernes gamle Kalendere." By Herr Geelmuyden. *Naturen*, No. 4, 1883.

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times the common usage in Iceland, as we have already observed, was to count by the weeks of each of the "*misseri*" instead of referring to months. According to Prof. Munch, the Northmen originally divided the week into five days, the so-called *Fimt* (Fifth), the later hebdominal week having been borrowed, like the names of the days, from the south. The latter, in spite of their apparent northern character, are in point of fact mere adaptations of the names of the Roman deities Mars, Mercury, Jove, and Venus, which reappeared in the old northern calendar as Ty, Odin, Thor, and Freja. Saturn alone failed to find a representative in this system of nomenclature, for to the genuine Northman it would seem that the last day of the week could have no other designation than that of "Laugar-dāg," or "Thvott-dāg," washing or bathing day. And this name has been retained through the intervening ages, being the only one that escaped the ban of the Church, when a century after the establishment of Christianity an episcopal ordinance interdicted the application of the names of heathen gods to the several days of the week, which were thenceforth known in accordance with their order of sequence, although *Sunnudāg* and *Mánadāg* in course of time replaced the older designations of "First Day" and "Second Day."

The new style was introduced into Iceland at the same time as in the foster- and mother-lands of Denmark and Norway, and in accordance with a royal edict, the day after February 18 in the year 1700 was reckoned as March 1. From that period to the present time the Icelandic calendars have given double tables based on the Gregorian, and the locally modified Julian system. A few modifications have, however, been made in modern times in the older national methods of intercalation, "summer day" falling on the Thursday between April 19 and 25, while in strict accordance with the past methods of computation it should fall on the Thursday between April 21 and 27. The intercalated week of the old "Sumar-auke" has also been shifted from midsummer to the close of the summer measure, and thus falls partly in September, "Haustmánadr," and partly in October, "Gormánadr."

THE ORFE, A FISH RECENTLY ACCLIMATISED IN ENGLAND

THE fine specimens of the "Orfe" presented by his Grace the Duke of Bedford to the International Fisheries Exhibition, and exhibited in one of the tanks of the Aquarium, fully deserve the notice of all interested in the culture of our freshwater fishes. They are some of a number which Lord Arthur Russell succeeded in importing from Wiesbaden in March, 1874, and which were placed in a pond at Woburn Abbey in Bedfordshire. Owing to the succession of cold summers these "Orfes" did not breed until last year, and we may hope that this season will also prove favourable. This species may now be considered as acclimatised, and will become a permanent acquisition to our ornamental waters.

The Orfe, whose bright yellow or golden colours resemble those of the Goldfish or Golden Tench, is, like these two latter fish, a permanent variety of a wild and much less brightly coloured race, belonging to the same genus as, but specifically distinct from, the Chub, with which it was confounded by some writers. Its systematic name is *Leuciscus idus*; of vernacular names those of "Aland" and "Nerfling" are those most generally used in Germany, whilst the Swedes know it by the name of "Id." The name "Orfe" refers to the golden-coloured variety only, which has been cultivated for centuries in inclosed waters in Bavaria. Willughby knew it well; he says in his "Historia Piscium" (Oxon, fol. 1686), p. 253:—"At Augsburg we saw a most beautiful fish, which they call the 'Root oerve,' from its vermillion colour, like that of a pippin apple, with which the whole body is covered, except the lower side, which is white." As in the Golden Tench, individuals of pure golden-yellow tints are scarce, the majority retaining marks of their origin from a plain-coloured ancestry in brownish spots or blotches on some part of their body. The ordinary size of this species is ten or twelve inches (and this is about the size of those at the Exhibition); but it is known to have attained to double that size and to a weight of six pounds.

The Orfe will thrive in all inclosed waters suitable to Roach and Goldfish; as an ornamental fish it is preferable to the latter on account of its larger size, livelier habits, and rapid reproduction; it takes the bait, and is eaten in Bavaria. As an ornamental domestic fish the Goldfish will always hold its own, but for waters of any extent and free from Pike and Perch we know of no more ornamental fish than the Orfe, a worthy rival of the Golden Tench, which has been so successfully acclimatised by Lord Walsingham; and we trust that his Grace will soon rear a sufficient number to secure to the Orfe a home in many different parts of the country. A. G.

SNOW AND ICE FLORA[1]

THIS work, which is included in Baron Nordenskjöld's studies and investigations arising out of his travels in the extreme north, is quite as interesting and important as regards the snow and ice flora of the Alps and Arctic regions, as the great traveller had led us to expect (see NATURE, vol. xxviii. p. 39). It is, as far as the materials on hand permit, an exhaustive account of the subject of which it treats.

As might be expected, the first pages of the work are devoted to "red snow," than which there are few subjects that have more engaged the attention of scientific travellers in the Arctic districts. This little plant has been found in the Arctic regions of Europe and America, thereby suggesting, as Prof. Wittrock observes, the former union of the two continents. It also appears in the north of Scandinavia, on the high Alps, the Pyrenees, and the Carpathians. Various were the opinions as to whether it belonged to the animal or vegetable world, and many the names by which it was designated. The prettiest of these names is certainly that given to it by C. Agardh—"the snow-flower." While, however, "red snow" will probably continue to be its trivial name, Prof. Wittrock has restored to it the scientific name of *Sphærella nivalis*, bestowed on it by Sommerfelt in 1882.

Until Nordenskjöld's expedition to Greenland in 1870, this alga was thought to be the only living plant on the ice and snow; but during their wandering on the inland ice, Nordenskjöld and Berggren discovered several algæ, among which was one new to science, namely, *Ancylonema Nordenskjöldii*, which was seen in such abundance, that it gave to the adjacent ground a peculiar purple-brown colour. Other algæ seemed to be mixed up with the fine sand (ice-dust, *kryokonit*), which here and there spreads a thin covering on the ice, or lies in a thick layer at the bottom of the funnel-shaped holes which are formed in it. Baron Nordenskjöld lays great stress on the important part which these algæ, and especially Ancylonema, play in the melting of ice. "The dark mass (algæ)," he says, "absorbs a larger portion of the sun's rays than the white ice, and therefore produces deep holes in the ice, which in a great degree conduce to its melting." He even thinks that this Ancylonema once performed the same office in Scandinavia, adding, "We have, perhaps, to thank this plant that the ice deserts which formerly covered Europe and America with a coating of ice, now give place to shady woods and undulating fields of corn."

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[1] "Om Snöns och Isens Flora. Särskildt i de Arktiska Trakterna." Af Veit Brecher Wittrock. Ur "A. E. Nordenskjöld, Studier och forskningar föranledda af mina resor i höga Norden." (Stockholm, 1883.)

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